I/WE CLAIM:

1. A sputter target comprising:

a substantially cylindrical side wall connected to an end wall, said side wall and said end wall having inner and outer surfaces wherein said inner surfaces are comprised of a high purity metal or alloy thereof for sputtering thereof during physical vapor deposition, said inner surfaces of said side wall having a texture which provides emission which avoids the central axis of the HCM, and said inner surface of said end wall having a texture which may provide emission normal to the surface.

2. A target as recited in claim 1 consisting essentially of Ta, which has a side wall with a major {112}/{110} texture and an end wall with a predominate {111} texture.

3. A target as recited in claim 1, wherein said outer surfaces of said side wall and said end wall are comprised of a metal other than Ta.

4. A target as recited in claim 3, wherein said outer surfaces of said end wall and said side wall comprise Al.

5. A sputter target assembly comprising:

a sputtering insert including a substantially cylindrical side wall connected to an end wall, said side wall and end walls having inner and outer surfaces;

an outer shell including a substantially cylindrical side wall connected to an end wall, said side and end walls having inner and outer surfaces; and

wherein said sputtering insert is received within said outer shell and said inner surfaces of said outer shell are bonded to said outer surfaces of said sputtering insert thereby forming a

substantially pot or bowl shaped target, said inner surfaces of said insert side wall and end wall being comprised of Ta for sputtering thereof during physical vapor deposition, said inner surface of said side wall of said insert having a major {112}/{110} texture and said inner surface of said insert end wall having a predominate {111} texture.

6. A sputter target assembly as recited in claim 5, wherein said outer shell comprises a member selected from Al, Cu, steel, Ti and alloys thereof.

7. A sputter target comprising:

a sputtering surface having a planar portion and a non-planar portion, the planar portion having a first crystallographic orientation and the non-planar portion having a second crystallographic orientation different than the first crystallographic orientation.

8. The sputter target of claim 7, wherein the sputtering surface is a high purity metal.

9. The sputter target of claim 8, wherein the target and sputtering surface are shaped by hydroforming with minimal heat and in the absence of annealing.

10. The sputter target of claim 9, wherein the first crystallographic orientation emits materials from the sputtering surface at a first angle and the second crystallographic orientation emits materials from the sputtering surface at a second angle different than the first angle.

11. The sputter target of claim 10, wherein the target and sputtering surface are pot or bowl-shaped, the planar portion comprising a dome and the non-planar portion comprising sidewalls of the pot or bowl-shaped target and sputtering surface.

12. The sputter target of claim 11, wherein the high purity metal is from among the group consisting of titanium, copper, tantalum and alloys thereof.

13. The sputter target of claim 12, wherein emissions of sputtered material from the dome occur normal to the sputtering surface of the dome, and emissions of sputtered material from the sidewalls occur non-normal to the sputtering surface of the sidewalls and doesn't intercept the cylindrical axis..

14. The sputter target of claim 13, wherein emissions from the non-planar portion are at acute angles from the surface of the non-planar portions.

15. The sputter target of claim 14, wherein the non-planar portion is comprised of a mixture of orientations after hydroforming.

16. The sputter target of claim 15, wherein the mixture of orientations in the non-planar portion is {112}/{110} tantalum.

17. A sputter target comprising a substantially cylindrical side wall connected to an end wall, said side wall and end wall having inner and outer surfaces wherein said inner surfaces are comprised of a high purity metal or alloy thereof for sputtering during physical vapor deposition, said inner surface of said end wall having a first crystallographic orientation to emit ions therefrom during said physical vapor deposition at angles substantially normal to said end wall, said inner surface of said side wall having a second crystallographic orientation to emit ions therefrom during said physical vapor deposition at angles that are substantially not normal to said side wall or intercept the cylindrical axis.

18. A method of making a sputter target having different crystallographic orientations in portions of a sputter surface of the target, the method comprising:

a. providing a hydroforming press having an annular platen, a housing holding a bladder filled with hydraulic fluid, and a mandrel;

b. placing a blank of material on the annular platen;

c. lowering the housing to contact the bladder with an upper surface of the blank;

d. raising the mandrel through a central opening in the annular platen to contact a lower surface of the blank;

e. raising the mandrel further to urge the blank into the bladder thereby increasing pressure in the bladder;

f. forming the blank into the desired shape by the resistance provided from the pressurized bladder and the mandrel urging the blank into said bladder;

g. retracting said bladder and mandrel to yield the sputter target; and

h. measuring the crystallographic orientations in various portions of the sputtering surface of the target; and wherein no annealing is performed after shaping of the target.

19. The method of claim 18, wherein the pressure in the bladder is up to about 15,000 psi.

20. The method of claim 19, wherein the hydroforming process occurs at room temperature.

21. The method of claim 20, wherein the mandrel is shaped to provide a target having a sputter surface comprised of a planar portion and a non-planar portion, the planar portion having a first crystallographic orientation substantially the same as that of the blank prior to hydroforming, and the non-planar portion having a second crystallographic orientation different than the first crystallographic orientation as a result of the hydroforming process.

22. The method of claim 21, wherein the blank is a high purity metal from among the group consisting of titanium, copper, tantalum and alloys thereof.

23. The method of claim 22, wherein the high purity metal is a mixture of {111}/{100} tantalum, having at least 20% {111} tantalum.

24. The method of claim 23, wherein the non-planar portion is comprised of a mixture of orientations after hydroforming.

25. The method of claim 24, wherein the mixture of orientations in the non-planar portion is {112}/{110} tantalum.

26. A method of making a sputter target assembly having first and second sputtering surfaces with said first sputtering surface having a first crystallographic orientation and said second sputtering surface having a second crystallographic orientation, said method comprising.

a. providing a blank of a first metal having said first crystallographic orientation;

b. forming said blank into a desired shape by deforming a portion of said blank to transform its crystallographic orientation from said first crystallographic orientation to said second crystallographic orientation;

c. said method being performed in the absence of heat treatment annealing to prevent recrystallization of said deformed portion of said blank back to said first crystallographic orientation.

27. A method as recited in claim 26 wherein said desired shape is a cup-shape.

28. A method as recited in claim 27 wherein said step (b) of forming comprises hydroforming.

29. A method as recited in claim 27 wherein said deformation is from about 35% or greater deformation.

30. A method as recited in claim 29 wherein said deformation is from about greater than 50% deformation.

31. A method as recited in claim 27 wherein said first metal is Ta and said first crystallographic orientation is chosen from {111} or mixed {111} {100}.

32. A method as recited in claim 31 wherein said Ta has a grain size of less than about 100 μm.

33. A method as recited in claim 32 wherein said first crystallographic orientation is predominantly {111}.

34. A method as recited in claim 33 wherein said second crystallographic orientation is major {112}/{110}.

35. A method of forming a sputter target assembly comprising the steps of providing a first metallic material;

providing a second metallic material;

forming said first metallic material and said second metallic material into a cup-shaped sputter target assembly including an outer shell composed of said second metallic material and a sputtering insert composed of said first material;

bonding said first metallic material to said second metallic material;

wherein said sputtering insert is disposed within said outer shell such that said sputter target assembly includes an outer substantially cylindrical wall defined by said outer wall and an inner substantially cylindrical wall defined by said sputtering insert, said method being performed in the absence of heat treatment annealing.